The Microsoft Antitrust Case: Rejoinder*

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1. Introduction

During the period between the writing of my Microsoft Antitrust article in this issue and the writing of this rejoinder, the most significant developments in the case were the filing of the appeal of Microsoft, the filing of the government's objections, and the open hearing of the case by the Washington DC court of appeals sitting *en banc* in late February 2001. The questioning of both sides by the judges of the court of appeals was very frank and pointed. Most of the criticism of the appeals judges (as seen by their questions and by the heated dialog with the lawyers of both sides) was aimed towards the plaintiffs. On a number of occasions, the appeals court judges questioned the validity of the district court's "findings of fact," calling them conclusions not based on fact.[1] The appeals court also seemed to question the strength of the plaintiffs' case (i) on the tying allegation, as well as (ii) on attempting to monopolize the browser market allegation.

The appeals court was critical of the procedure that Judge Jackson used in the remedies part of the case,[2] as well as of the necessity and effectiveness of the ordered

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[1] For example, at the February 27, 2001 morning hearing of the appeals court, judges questioned Jeffrey P. Minear, representing the United States, as follows:

> "THE COURT: The District Court, like I said, there are some findings that are merely just conclusions and I find no basis for them. So I'm not in that camp that says because the District Court lists something under findings of fact it's gospel. There has to be a fact in fact.
> THE COURT: It has to be supported.
> THE COURT: And it has to be supported by something other than the mere statement of the District Court."

In a second example from the same hearing, a judge asks Mr. Minear:

> "THE COURT: Let me ask you again so that you can help me. This is one of the cases, one of the places for me, where the failure of the findings of fact to point to any record, citations, makes it very, very difficult on appellate review because they are very conclusionary statements here that I tried to trace to determine whether there was any real data to support the observation that there was a market for browserless operating systems. It is certainly not intuitive given that all of the operating systems offer browsers that can be removed or deleted.
>
> But in making your argument that in all the other cases they can be removed and therefore Microsoft is forcing, you're ignoring Microsoft's counter-argument which is they don't integrate as deeply.
>
> But in any event, make that your second answer. Tell me if there is any data to back up … I quite frankly ... I hear my colleagues in the first part of this argument that we're supposed to defer to factual findings. But when I find factual findings that look very conclusionary and there is no citation to anything, I don't think my obligation as an appellate court is to defer to them. So what is the data?"

[2] For example, at the February 27, 2001 morning hearing of the appeals court, a judge asked David C. Frederick, representing the United States:

> "THE COURT: Let me ask you a couple of questions about the standard applied by the District Court. The District Court said that the plaintiffs won the case, and for that reason alone have some entitlement to a remedy of their choice. The District Court also said these officials are by reason of office obliged and expected to consider and to act in the public

remedy (breakup).[3] The appeals court also seemed to be very critical of Judge Jackson's extended interviews with journalists and strongly suggested that if the case is remanded to a lower court (for either a new determination of facts, or for determination of remedies, or both) that it should not go to Judge Jackson.[4] Overall, the court of appeals appeared unlikely to affirm all three parts of the liability decision of the lower court and also unlikely to affirm the breakup remedy.

Professors Frank Fisher, Daniel O'Brien, and Francis O'Toole wrote commentaries on my Microsoft Antitrust article in this issue, and I am grateful for their remarks. My comments below are mostly on issues where I either disagree or I feel that there is a need for further research. The authors also discuss a number of issues that were not discussed in my original paper. Because of shortage of space, I will not discuss all the issues raised, although I would have liked to.

2. Issues Raised by Professor Fisher

In his comment, Prof. Fisher has written very extensive comments on the Microsoft case that are not limited to my original paper. In a number of cases, Prof. Fisher and I disagree on the facts. Prof. Fisher puts considerable faith in the "findings of fact" of the District Court. However, judges of the Washington DC Court of Appeals in a recent (February 2001) open court cross examination of DOJ's (and Microsoft's and States') lawyers stated that they believed that some of the conclusions in Judge Jackson's "findings of fact" were *not* based on facts, and signaled the intend of the Court of Appeals to re-examine the lower court's "findings of fact." In any case, my disagreement with Prof. Fisher on facts cannot easily be resolved in this setup, so I will concentrate on the economic arguments.

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interest. Microsoft is not. Are those appropriate standards for a District Judge to consider in framing a remedy?"

[3] For example, at the February 27, 2001 morning hearing of the appeals court, a judge pointed to David C. Frederick, representing the United States:

> "THE COURT: Stranger still, even after the remedy, Microsoft retains the monopoly. You cited Grinnell, and I think there's a point in the Supreme Court's opinion in Grinnell that says the first order of business when there's been a Section 2 violation is to issue a remedy that will destroy the monopoly power. This remedy doesn't do that."

In another question in the same hearing, a judge notes the potential problems that a breakup might create and the fact that there was no hearing to discuss them:

> "THE COURT: No, no, no. The question that's being raised is whether a company that has not grown through combinations can be perforated along the lines proposed by the government without a hearing into the problems that might create."

[4] For example, at the February 27, 2001 afternoon hearing of the appeals court, a judge asked John G. Roberts, representing the States plaintiffs:

> "THE COURT: Well, I'm not sure that I see how you can with a straight face ask us if we remand, to send it to the same judge after these comments."

First, let me point out the point where I agree with Prof. Fisher. I concur that high technology industries are not above or outside the reach of antitrust law. It is perfectly valid for actions by high technology companies to be scrutinized by antitrust authorities. It may also be difficult in these fast-moving industries to pin down the right market definition.

There is a major point on which I disagree with Prof. Fisher. In his commentary, he augments his definition/rule of an anti-competitive act as one that "involves a deliberate sacrifice of profits in order to gain or protect monopoly rents as opposed to gaining of rents through superior skill, foresight, and industry." I believe that I do not misstate in my main paper the earlier Fisher definition of anti-competitive acts. There I used the definition that Prof. Fisher had used in pre-filed testimony and in his live testimony at the trial. The new definition of an anti-competitive act (in his commentary to my paper) has the additional part "as opposed to the gaining of rents through superior skill, foresight, and industry."

I have already discussed in the main paper the faults of the earlier rule. But I believe that the new Fisher rule also has faults. First, it is too vague and hard to implement. To implement this rule, the antitrust authority, a judge, or a jury need to know what monopoly profits would have existed if the act that may be characterized as anti-competitive were not taken, and the extent that this particular act has affected monopoly profits. This is a task of enormous difficulty and uncertainty. The judge will have to be able to calculate the profits that would have been realized in a hypothetical situation in which the particular act (that may be possibly characterized as anti-competitive) were not taken, compare them with the present situation where the act was taken, and conclude that profits were lost as a consequence of taking the particular act. This requires a calculation of the firm's profits in the long run when the act is taken and profits in the long run when the action is not taken. And, a proper comparison would require a calculation of the firm's profits in the long run when, having not taken the act that may be characterized as anti-competitive, the firm implemented instead other strategies. That is, if one makes long run maximum profits comparisons, and truly wants to implement Fisher's rule, one needs to calculate the maximized profits in the absence of the act that may be characterized as anti-competitive. This requires calculating profits where the firm has implemented other strategies not used at present because, for example, they were substitutes to the act that may be characterized as anti-competitive, or were in conflict with it.

This task is extremely difficult because it requires that the judge and jury understand the long run optimization strategy of the firm. Economists have a multitude of oligopoly models and cannot agree on which is best. It may be almost impossible for the court to correctly and with high confidence make the calculations required by the Fisher rule. In the Microsoft case, for example, both sides failed to adequately explain the long run profit maximization model that Microsoft actually used to price Windows over a long period of time, before as well as after the alleged anti-competitive actions. One wonders how the courts would possibly be able to make the additional hypothetical calculations required for the implementation of the Fisher rule. What oligopoly model

would the court adopt? What other strategies would the court expect to have been implemented in the absence of the act that may be characterized as anti-competitive? What equilibrium paths would the court expect to be followed in the long run? These are very hard questions that are unlikely to be answered in a satisfactory way given our present knowledge of economics. In practice, the Fisher rule would constrain dominant firms from aggressive pricing, investment, and innovation behavior that would be seen, at least by some economists, as fitting exactly the requirements of anti-competitive behavior of the Fisher rule. If such aggressive behavior is prevented or punished, the ultimate losers are current and future consumers.

Moreover, the additional caveat of the new Fisher rule means that the present versus hypothetical analysis described above has to be done with reference to monopoly rents over and above those that arise out of "superior skill, foresight, and industry." So, two types of monopoly rents have to be calculated in each case of the hypothetical equilibrium (where the action is not taken but possibly other hypothetical actions are taken) and of the actual equilibrium (where the action was taken). The judge and jury now have the additional burden to ascertain the extent that present as well as hypothetical rents are monopoly rents not arising out of "superior skill, foresight, and industry." This makes their task even more difficult.

Based on these considerations, the Areeda predation rule is vastly superior because it does not require the court to make the very difficult profit maximization calculations described above, some of which are by their nature speculative because they require an analysis of firm behavior in hypothetical situations. Instead, the Areeda rule is based on a comparison of incremental cost and price, which are much easier to determine than what is required in the Fisher rule.

There is a second important deficiency of the new Fisher rule that also applies to the old one, and I have mentioned it in my original article: the rule may mischaracterize pro-competitive behavior as predatory and anti-competitive. Although some anti-competitive actions have the features described by the Fisher rules, so do many pro-competitive actions. That is, every action that obeys the Fisher rule is not anti-competitive. There are many pro-competitive actions that firms take where they sacrifice profits for some time in order to gain profits in the long run. For example, suppose that, in an industry with network effects, a firm sells a product at a low price (but above incremental as well as break-even average cost), expecting to attract customers to its product of proprietary design. Moreover, suppose that as new customers come to market, the firm continues to use this strategy and does not increase the price over an extended period of time. As a consequence, the firm's market share increases to the point that this firm is considered dominant. This strategy may have purely pro-competitive causes but it fits well in the Fisher definition of anti-competitive acts. A court implementing the Fisher rule could find such a firm liable of predation and thus eliminate the benefits to consumers of the pro-competitive strategy.

Finally, the Fisher rule does not require that the lost monopoly rents be eventually recovered. The courts are urged to characterize acts that fit the Fisher rule as predatory

and to take action against firms exhibiting such behavior typically *before* the final act of recovery of profits occurs, and therefore without knowledge or certainty that profit recovery will occur. Thus, the Fisher rule does not wait for the final act (recovery of lost rents) that could distinguish between pro-competitive and anti-competitive acts. It rushes to judgment before a certainty of an anti-competitive act. Prof. Fisher is concerned that unless antitrust authorities act *before* consumers are harmed, "corrective action might come too late." But, if we follow Prof. Fisher's rule, we can rely only on faith in the correctness and applicability of an oligopoly model to reach the conclusion that consumers will be harmed at some time in the future. There will be no certainty. And, in most hypothetical situations, given the multitude of oligopoly models with contradictory results, there cannot even be a consensus of a high probability that consumers will be hurt in the future. Thus, the Fisher rule will just create one more battle ground among economic consultants, some stating that it is inevitable that consumers will be hurt in the future, while others seeing only pro-competitive behavior. Ultimately, if this rule is adopted, the big winners will be economic consultants. The big losers will be companies that take aggressive competitive actions, which will regularly be sued on predatory grounds by their less aggressive (or less efficient) rivals. In the long run, if the rule is widely adopted, repeated antitrust intervention will coach aggressive competitors not be that aggressive and to instead accommodate competitors, resulting in very significant losses to consumers.

3. Issues Raised by Dr. O'Brien

In his comment, Daniel O'Brien concentrates on four issues discussed in my paper. These are (i) the effects of the per processor contract in the earlier Microsoft case; (ii) Windows pricing; (iii) the issue of substitutability of an Internet browser with Windows; and (iv) the costs and benefits of the proposed break-up. I respond to each issue in sequence. O'Brien sees Microsoft "per processor" licensing practices before the 1995 consent decree as a weak form of exclusive dealing arrangement on top of a non-linear pricing contract. Whether it is possible to see these contracts in this light would require a full analysis of the market equilibrium, which, although very interesting, cannot be done here. However, in general, there is no definite conclusion on the welfare implications of non-linear contracts offered to oligopolists, and this short rejoinder is not the appropriate place for a full analysis of this issue. Moreover, in my original article, the pre-processor issue is only discussed in passing as part of a historical introduction to *previous* antitrust cases against Microsoft, while my article focuses on the current U.S. v. Microsoft case.

On the issue of Windows pricing, O'Brien concludes: "it is at least plausible that the Windows price is close to the 'monopoly' price." He bases this conclusion on a recent paper by Werden (2001) who assumes that Microsoft sells Windows to two different demand functions (one for expensive, and one for cheap computer hardware) and is constrained to sell at the same price to manufacturers on both demand curves. Essentially Werden argues that demand heterogeneity (cheap versus expensive hardware) and the fact that computers are vertically differentiated and are sold at a variety of prices

could account for a low elasticity of the derived demand for Windows, and this is "likely to reduce substantially the monopoly price of Windows."[5] Opposite claims are made by Reddy *et al.* (2001).

In my opinion, there are three problems with the Werden paper. First, Werden (and Reddy *et al.*) does not seem to take into account the influence of the Windows price on the demand for the final product (computer hardware plus Windows) as is appropriate. Thus, in Werden the problem is formulated as if the derived elasticity of demand for Windows does not depend on the Windows price but rather only on the computer hardware price. This does not disqualify the methodology of his argument, but does require an adjustment of his calculations, which affects the monopoly price calculation.[6] Moreover, even when the individual demand functions for Windows are (weakly or strictly) concave in their respective ranges, the aggregate (market) demand function *defined for a wide range of prices* may not be concave. Therefore the profit maximization problem may not be quasi-concave in price, and there is no guarantee of a single peak of the profit function in the price of Windows. Thus, it is very possible that sometimes the price calculated from the first order conditions does not correspond to the global profit maximum.[7] Second, for the monopoly price determined by Werden to even come close to the actual Windows price, he has to assume very low prices for hardware, which are hard to justify in the relevant time period. Third, many of the calculations are done without pinning down the shares of cheap and expensive computers, which is

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[5] Werden also allows Microsoft to realize some revenue from complementary goods to Windows that it also sells. Although this in effect lowers the monopoly Windows price as in Economides (2001), it is not the main issue he raises.

[6] Taking into account the influence of the Windows price on the demand for the final product, I put the Werden model in the framework of Economides (2001). Suppose there are two demand functions for computers, $D_1(p_{H1} + p_W)$ and $D_2(p_{H2} + p_W)$, where prices p_{H1} and p_{H2} are the prices of expensive and cheap computer hardware and p_W is the price of Windows. Total demand for computers is $D = D_1(p_{H1} + p_W) + D_2(p_{H2} + p_W)$. Let the market share of the expensive computers be $s_1 = D_1/D$ so that $D_2/D = 1 - s_1$, and the demand elasticities be $|\varepsilon_1|$ and $|\varepsilon_2|$. Microsoft's profits from Windows sales are

$$\Pi_W = p_W [D_1(p_{H1} + p_W) + D_2(p_{H2} + p_W)] - F_W ,$$

where F_W is the fixed cost. Profit maximization requires

$$D + p_W[dD_1/dp_W + dD_2/dp_W] = 0 \iff 1 - p_W[s_1|\varepsilon_1|/(p_{H1} + p_W) + (1 - s_1)|\varepsilon_2|/(p_{H1} + p_W)] = 0.$$

Given the two elasticities, the two prices of computer hardware (cheap and expensive models), and the share of the expensive models sales, this quadratic equation determines the optimal candidate monopoly price for Windows as a function of the two demand elasticities and the two hardware prices. Since, in general, the profit function is not quasi-concave, one needs to test which of the first order condition solutions is the global profit maximum. Then one needs to plug in the actual share of expensive computers s_1, the two demand elasticities and the two hardware prices, and reach the optimal Windows price. Werden (2001) and Reddy *et al.* (2001) working with a less accurate model as explained above, differ in their final conclusions on the profit maximizing value of p_W.

[7] Reddy *et al.* (2001) point to an example in this problem where the first order condition solution corresponds to a local minimum of the monopolist's profit function.

necessary since we know the average price of hardware in the relevant time period. As a more general matter, it would seem that Microsoft, being in complete control of the OEM channel as argued in trial, should have been able to charge different prices for high end and low end computers, or at least adjust the individualized contracts it offered to OEMs based on their mix of cheap and expensive computers. If one assumes two different (derived) demand curves for Windows, one has to also explain why Microsoft is constrained to a single price.[8]

On the substitutability of browsers with Windows I have little additional to say. On the breakup remedy, O'Brien and I do not disagree.

4. Issues Raised by Professor O'Toole

On the issue of the breakup, O'Toole suggests to consider the degree of incompatibility as a policy variable. I have no objection, and I have done so in a number of papers dating as far back as 1987. Many economic models show that full compatibility is preferable for society than incompatibility. But antitrust authorities and courts do not have the ability to impose compatibility. Compatibility could be imposed by a regulatory body, but this requires regulation and all the problems that regulation brings.

The issue of barriers to entry raised by O'Toole is important for this case and for antitrust in general because it can be misunderstood, and often it has been. There is an increasing number of goods that are produced with processes that exhibit increasing returns to scale, that is, their average production cost decreases with quantity. There are also an increasing number of goods that exhibit positive consumption externalities or "network effects," so that the value of the last unit is increasing in the number of units sold (or expected to be sold). In both of these cases, the existence of increasing returns to scale or of network effects does not *by itself* create barriers to entry, as long as the technology of production is available to competitors. In contrast, as I have noted in the original article, barriers to entry exist when, in the relevant time frame, entrants are facing *asymmetrically* higher costs than the incumbent(s). This fact was lost to the court, which did not define the relevant time frame for the analysis. Instead, the court took a snapshot, and characterized existence of many Windows-compatible applications as immediate evidence of barriers to entry.

On the issue of a possible consent decree that would settle the case, O' Toole believes that DOJ should be risk averse in constructing a consent decree since previous experience has shown significant levels of information asymmetry between Microsoft and DOJ. I believe that, in constructing a consent decree or in proposing remedies, DOJ should take into consideration the informational asymmetry between Microsoft and itself,

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[8] Werden states that price discrimination based on PC type is impractical. But, if there are two substantially different monopoly prices for low end and high end PCs, Microsoft is likely to have found a way to extract the extra surplus from the OEMs either through contractual arrangements or through its control of the technical standards.

as it always does. Such an informational asymmetry is typical of any settlement or remedies proposal involving a high technology firm, and may also arise often in low technology cases. Does the informational asymmetry mean that a breakup is preferable? No! And, with full knowledge of the costs of a breakup to consumers and firms, DOJ has historically refrained from proposing such a draconian measure except in a tiny percentage of cases. Instead, in a large number of cases where it was at an informational disadvantage, DOJ has constructed detailed conduct remedies proposals and settlements that eliminate anti-competitive behavior without resorting to a costly breakup. I believe that conduct remedies should have also been the appropriate proposal by DOJ in this case, and DOJ must have also shared this belief when it proposed a conduct-based settlement to Microsoft in March 2000.

5. Concluding Remarks

Ultimately, the antitrust case against Microsoft is relatively weak. After review by the Appeals Court and possibly by the Supreme Court, it is extremely unlikely that the final outcome will be a breakup of Microsoft. In fact, the final remedy imposed on Microsoft or the terms of a possible settlement of the DOJ suit are very likely to be weaker than DOJ's settlement terms of March 30, 2000, to which Microsoft is reported to have agreed.[9]

The Microsoft case has certainly been the most important antitrust case of the "new economy" this far. Unfortunately, its legal battle was fought to a very large extent without the use of the economics tools that are at the foundation of the new economy and were key to the business success of Microsoft. There are a number of reasons for this. First, often, legal cases are created and filed before an economist is found who will create the appropriate economic model to support the case. Second, the economic theory of networks is so inadequate and unsettled that there is no commonly accepted body of knowledge on market structure with network externalities, based on which one could evaluate deviations toward anti-competitive behavior. Third, the legal system has tremendous inertia to new ideas and models. Fourth, the legal system is ill-equipped to deal with complex technical matters. Fifth, given all these facts, lawyers on both sides find it easier to fight the issues on well-treaded ground even if the problems are really of a different nature. It is as if there is a dispute among two parties in the middle of a heavily forested area, but the lawyers of both parties fight it as if the dispute happened on the open plains, because they know the way disputes on the plains are resolved while the law of dispute resolution in forests has yet to be established. I hope that in the last parts of the legal process of this case, as well as in the next new economy antitrust case, there will be a deeper understanding of the economics of networks and of the way the law should apply to network industries.

[9] Provided of course that published reports of the settlement proposal in the New York Times and elsewhere are correct as summarized in my original paper in this journal.

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